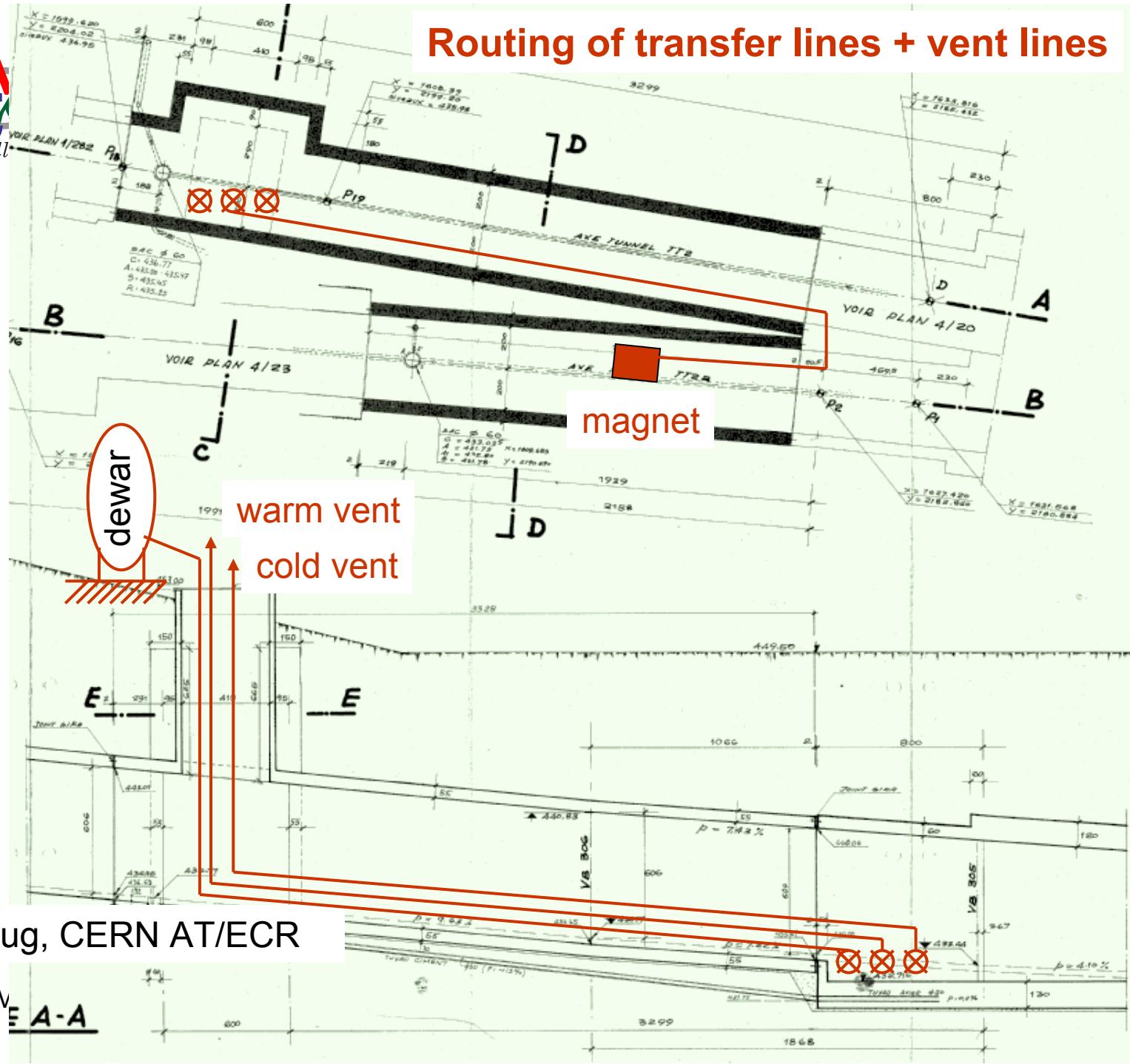


F.Haug, CERN AT/ECR

10.M

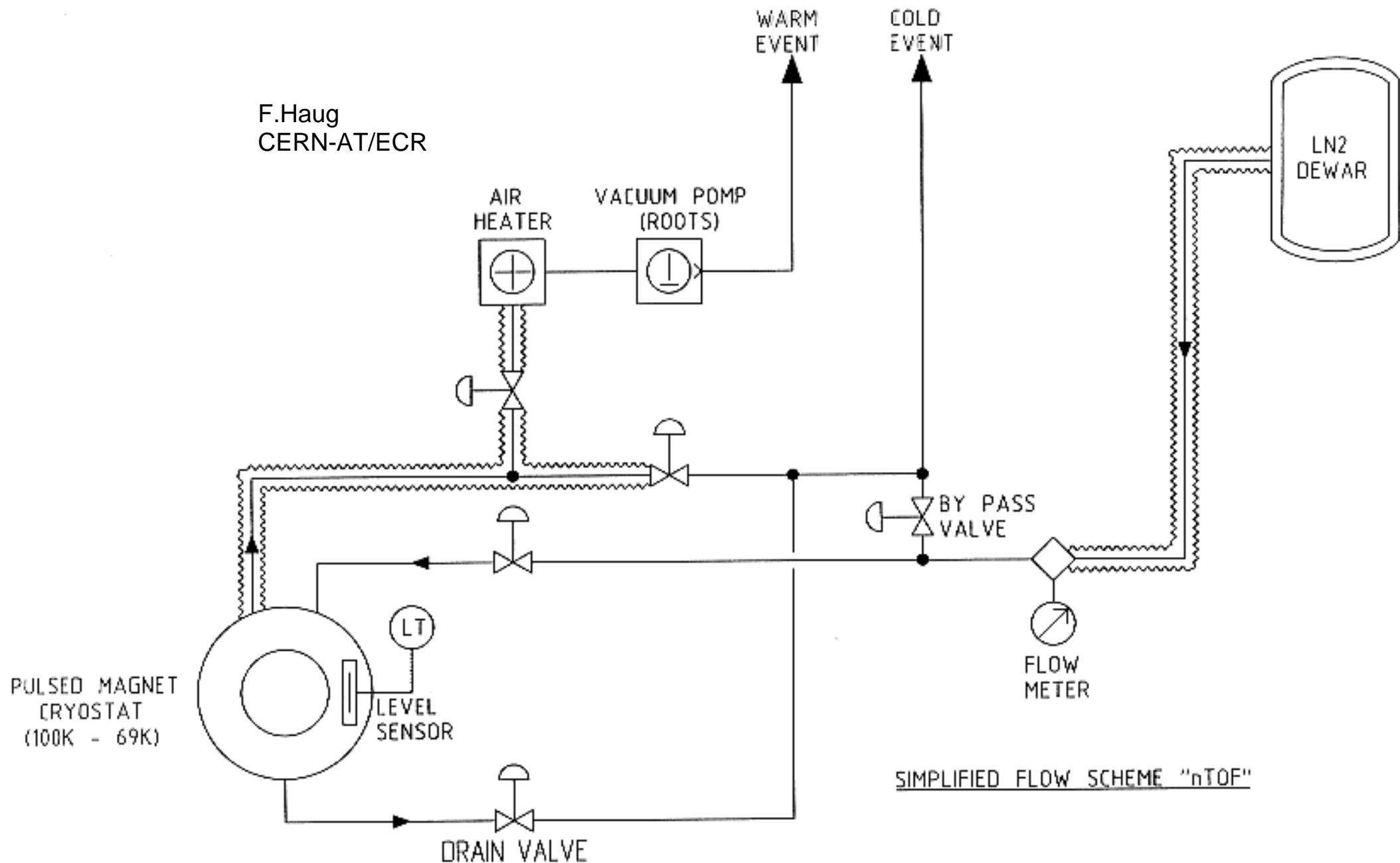
1

Routing of transfer lines + vent lines



About 60 m from target place to surface

F.Haug
CERN-AT/ECR



| COST ESTIMATE (Draft) | | | |
|---|--|-----|--------------------------|
| by F.Haug CERN-AT/ECR 13.April.2004 | | US | CERN* |
| TT2A Pulsed Magnet Installation and Operation | | | |
| | | | kCHF (material+manpower) |
| Proximity equipment | | | |
| 1) DVB valve box | | 60 | 60 |
| 2) vacuum pump for insulation vacuum of magnet/equipment | | | |
| 3) vacuum pump for reducing pressure in bath | | 25 | 25 |
| 4) heat exchanger or el. heater | | 15 | 15 |
| | | | |
| Intermediate Infra | | | |
| 1) transfer line for cooling and filling | | 70 | 0 |
| 2) exhaust for cold nitrogen gas | | 70 | 0 |
| 3) pump line (warm) DN150 | | 18 | 0 |
| External Infra | | | |
| 1) LN2 reservoir next to vertical shaft (rental) | | 20 | |
| 2) Concrete Platform (to be constructed) | | 20 | 20 |
| Process control and instrumentation | | | |
| 1) Controls equipment (PLC/supervision) + programming | | 70 | 70 |
| 2) Instrumentation and cabling | | 70 | 70 |
| | | | |
| Safety | | | |
| 1) ODH and warning system | | 20 | 20 |
| | | | |
| Installation | | | |
| Installation manpower | | 25 | 25 |
| Deinstallation | | 10 | 10 |
| | | | |
| Operation | | | |
| 1) cryogenics team | | | |
| -surface tests 250 shots | | 20 | 20 |
| -underground 250 shots | | 25 | 25 |
| 2) Fluids 200 l shot x 500 shots | | 15 | 15 |
| | | | |
| TOTAL | | 553 | 200 |
| | | | 175 |
| | | | |
| Engineering | | | |
| ECR group engineering/design 4 man months = 80 days x1000 CHF/day | | 80 | |
| | | | |
| GRAND TOTAL | | 633 | |
| | | | |
| * if already available at CERN, material can be reused and results in lower costs | | | |

